Operating Features

Basic PAVER Features

PAVER introduces several new **Engineered Management System (EMS)** tools: **EMS Query, Report Viewer, Right Button Click on Tables, and Right Button Click on Graphs.** The PAVER program is designed using commercial Windows components and the user interface follows standard Windows protocols. Familiarity with basic Windows user skills is assumed in the design of the program, the preparation of program documentation, and the design of the help system.

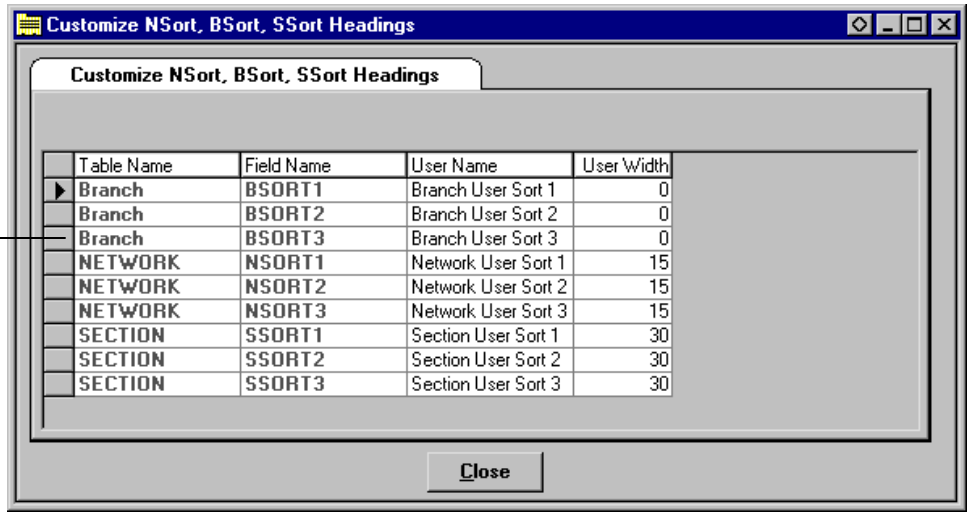
Several specialized custom tools are featured in PAVER. These tools are Windows consistent and after a brief introduction, will enhance your use of PAVER. These tools are also being made available to developers of other EMSs. Consequently, the features you learn to use in PAVER will be of use in other EMS systems.

Spreadsheet Forms

The basic form for editing and viewing data in PAVER is a table that operates like a spreadsheet. In some instances, these forms are used only to present data and the values displayed cannot be edited. On other occasions, you are able to edit the data or add new lines to the table.

As with other tools, highlighting the spreadsheet and right clicking invokes a menu of spreadsheet tools. Depending on the context, some of the right button click features may not be available. Inactive features are listed in the menu as light gray, while active features have a darker color. The basic right button click spreadsheet features allow table zoom, table layout customizing, add/edit/delete record, search, import/export, print table, and graph options.

Spreadsheet form



Index Cards

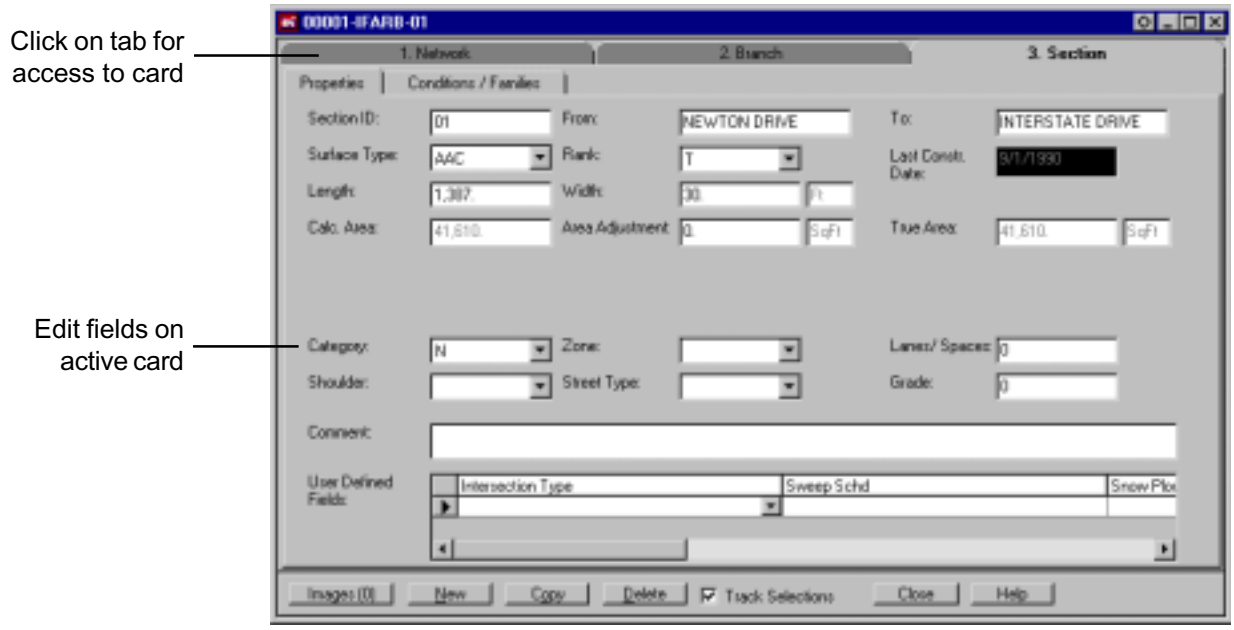
Index-style data entry windows are used in several forms by PAVER: **Inventory, Prediction Modeling, Condition Analysis, M&R Planning,** and **EMS Query**. The index-style windows place data entry fields on multiple forms that look and operate like paper index cards. Therefore, if the PAVER form you are using has an index card style interface, you may switch between multiple cards without opening or closing additional windows.

When a window containing index-style data cards first opens, one of the form's index cards is the initial active card. Each index card form includes a tab with a descriptive title. When the index card is active, the contents of the card are visible and can be edited. Only the tab portion of non-selected index cards is visible. Typically, the selected index card and its table is highlighted with a brighter background color. The non-selected index card tabs are darker. Colors vary depending on the Windows color scheme you have selected.

Note

Changes made on the index data cards are made real-time. PAVER auto-matically saves any changes the user makes.

To change the active index card, use the mouse to point to an inactive index card title and left click. The selected card becomes the active card and the previously active card becomes inactive. You can now edit or add entries to the fields on the active index card. After editing is complete, click the close button on the form or use the Windows close form menu. Your data is saved to the database in real time as you make your edits. This means there is no action required to save your changes.



Tab Tables

PAVER Tab (tabular) Tables are spreadsheet-like tables used in PAVER to display and edit system configuration information. The **Tab Tables** are accessed from the **Tables** menu option. **Tab Tables** look and operate like spreadsheets. Right button click features are used to print, zoom and configure the tables. Buttons on the bottom of the tab form are used to add and delete records.

There are two types of **Tab Tables**, basic (**Independent**) and linked (**Dependent**). The basic table operates like a standard spreadsheet except that data input into the table is controlled by the series of buttons (**Close, Add and Delete**) that are arrayed along the bottom of the **Tab Table** forms. Clicking the **Add** button inserts a new record into the table, which can then be edited. The **Delete** button is used to remove the highlighted record in the table. The mouse or arrow keys are used to move up and down the rows and across columns in the active **Tab Table**. The active record in the table can be edited. The **Close** button is used to close the **Tab Table**.

The second type of **Tab Table** is a linked table. The linked table uses the records of a basic table or tables as the basis for its data entry. The linked table is referred to as the child, or dependent table, and the basic table is the parent (**Independent**) table. For example, the work type cost table uses three work type tables: localized, global and major as the basis for its entries. Therefore, when you add a record to the work type cost table (a linked table), you click the **Add** button and get a pick list of possible values to add. The table is formed from the entries in the linked table's parent table(s) (localized, global, and major M&R tables in this case).

Linked tables help PAVER enforce consistency in its data tables. For example, if the work type cost table was not linked to the M&R tables it, would be possible to develop costs for M&R procedures that were not even defined. This type of inconsistency, if it occurred, can damage the accuracy of analysis routines like the **Work Plan**.

Printing Screen Images

Printing in PAVER is accomplished in one of three ways. First, the standard PAVER reports include specialized forms for printing reports (see the **Standard Reports** section). The PAVER right button click on tables or graphs tool provides a method of printing tables or graphs. In certain situations, you may wish to print the contents of a screen as it appears, which can include multiple tables, graphs or other data entry forms. To print the image on your screen, select **File** from the PAVER Menu and then **Print** from the **File** sub-menu. In some instances you will note that the **Print** option is not available to select from the **File** sub-menu. This means that there is currently no printable object on the PAVER Desktop.

After selecting **Print**, the print dialog box appears on your screen. The form contains a drop list labeled **Print What**. Open the drop list and select **Form Image**. Click the **OK** button to send a print of the active PAVER window to the printer. You may use the **Printer Setup** dialog window to select an alternate printer if you have access to multiple printers. After you have printed the form image, the print dialog window closes and you return to the PAVER window that was active when you selected the **Print** option.

Note

Each time that you wish to print a graph in color, you must select color using the **System** button on the graph **Toolbar**.

Graphs in PAVER can be printed in either black and white or color. The default setting in PAVER is black and white printing for graphs. To choose color printing, right button click on the graph and select **Toolbar**. On the toolbar click the **System** button. Under **Printing**, change the selection from **Mono** to **Color** and click OK.

Units of Measurement

To change units from English to metric, go to the **Preferences** selection on the PAVER Menu located above the **PAVER Button Bar**. Click once on **Preferences** and then select **Metric Units** from the **Preferences** sub-menu. Rounding error is not introduced into stored data values if repeated changes between English and metric units occur, because all measurement values in PAVER are stored as metric values. Changing the setting in **Preferences** changes the filters that are used for presenting data on PAVER screens and reports. To ensure that the display properly reflects the unit change, it is best to close all data entry and report screens before switching preferences.

Adjusting Table and Graph Sizes

Tables and graphs automatically re-size to the available space on your computer display. As the number of active tables increases, the number of lines allocated to each table reduces. If a table is associated with a graph, the table and the graph share the horizontal space that is allocated to the table. You can adjust the space allocated between a table and its associated graph by pointing to the vertical bar that separates a table from its graph and then, while pressing the left mouse button, drag the separator bar to the right or left. You cannot manually increase or reduce the vertical space allocated to a table in the **Report Viewer**. If you want to increase the vertical space available for a table you must close one of the other **Report Viewer** tables. You may use the zoom function on active tables with the right button click tool for a temporary larger presentation of a table or a graph.

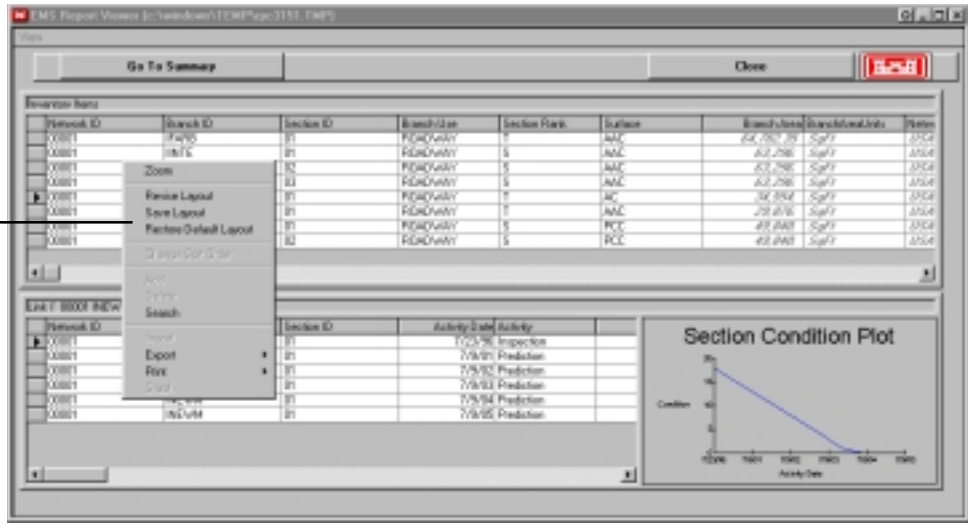
Right Button Click on Tables

Whenever possible, information in PAVER is presented in tables. These tables are used to input, edit, and review reports (**EMS Report Viewer** and **Reports**). The tables in PAVER are equipped with several features that enhance the capabilities of the PAVER system. These features include:

- Table printing
- Exporting the table to Excel
- Changing the formatting of the table
- Zooming on the table
- Adding or removing fields
- Sorting the table

To access the extended table features you must first make the spreadsheet table active, by clicking on the table. Once the table is active and the mouse pointer is over any portion of the table, right click to invoke the menu of extended table features. Select items from the right button click menu by pointing to the menu item and left clicking.

In addition to the right button click table features, column widths can be reduced or enlarged when a table is active. To change column width, point to the vertical line positioned between the columns. When the mouse pointing indicator changes from the large arrow to the small double arrow icon, click and drag the column border to the desired size.



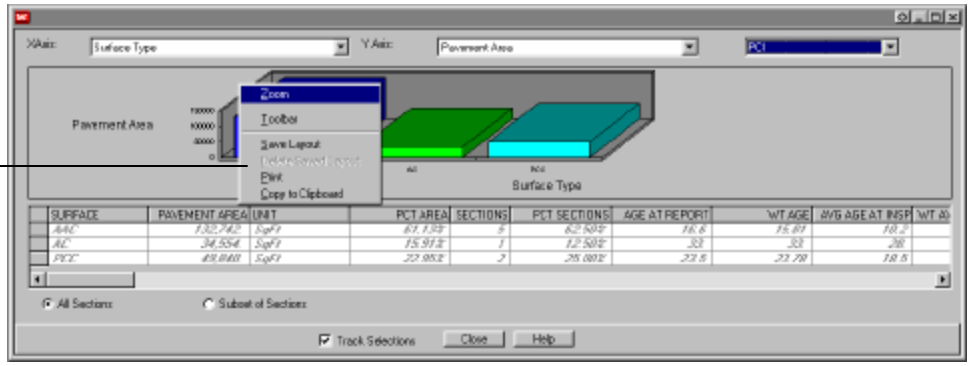
Right Button Click on Graphs

PAVER graphs can be printed, customized and zoomed in the same manner as PAVER tables. To view a PAVER graph, make the graph active by clicking on the graph. While the graph is active and the mouse pointer is anywhere on the graph right click to invoke the graph menu. Select items from the graph feature menu which is accessible with a right button click.

You can customize the look of PAVER graphs on the fly by using the EMS right button click tools. The graph **Zoom** feature enlarges the graph to the full extent of the window in which the graph is located. From the zoomed graph window, you can copy the graph to the clipboard to later paste into spreadsheets, presentation programs or other Windows applications. To return to the original window, right click on the zoomed graph and select **Unzoom**.

Toolbar invokes a graph editor (**Graph Control**) that allows you to customize graph type and presentation. For example, you may change the graph type from a two dimensional bar graph to a three-dimensional pie chart. The **Save Layout** feature saves the current graph configuration so that on subsequent visits to the current graph it will retain the graph properties you specify using the **Toolbar**. The final graph feature, **Print**, allows you to print your graph to a Windows printer.

Right Button Click menu



EMS Query Tool

The **EMS Query Tool** is used in several places in PAVER to select a subset of pavement sections to use in reports and data modeling. The query tool can also be used to specify the sorting order of data. Selection and sorting criteria specifications can be stored and retrieved by name in the **Stored Criteria** box. The query tool also reports the record count (number of sections selected), as filtering queries are built.

Using the EMS Query Tool

Filter criteria are entered using the drop boxes arrayed across the query form. Fields are entered from left to right and top to bottom. As you enter query information, only the next field will be highlighted for user selection. For example, use the first entry in the **Field** column to select Surface. Once you have selected **Surface**, the **Comparison** field is highlighted. After selecting a query field and the comparison evaluator (=, >, <, >=, <=, <>), the **Compare To** field becomes active. The drop list on the **Compare To** field lists the available choices in the database for the selection you made in the **Field** column.

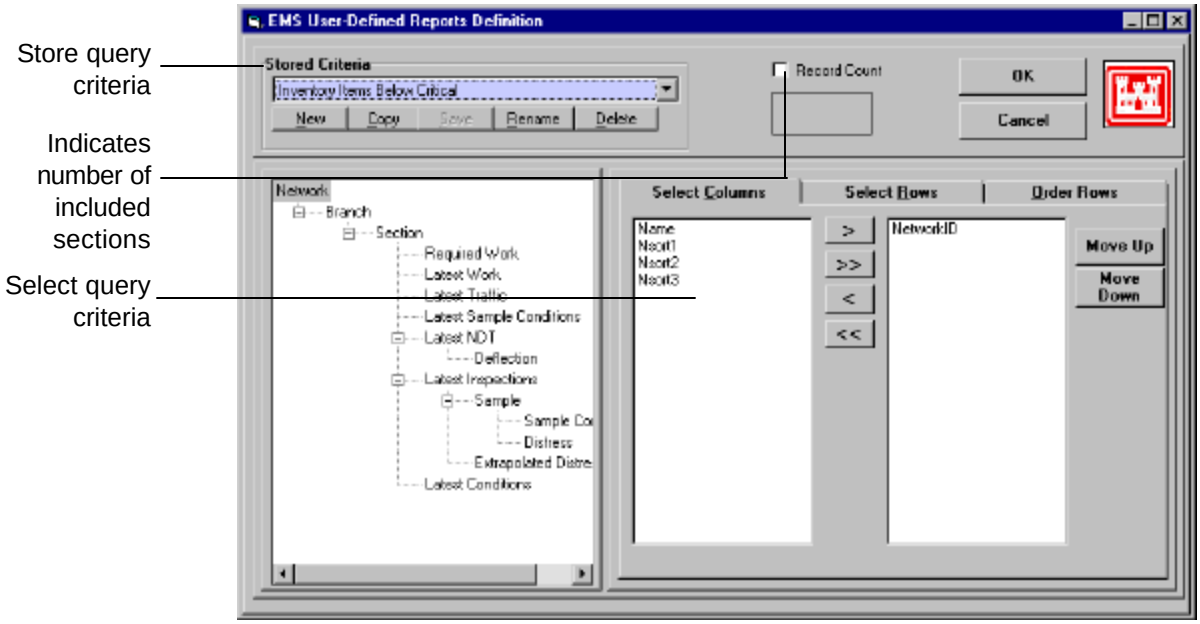
Note

Clicking the **Record Count** checkbox shows real time updates of how many pavement sections are currently selected by the query tool.

After you make a selection in the **Compare To** field, the record count indicator will change as the query you are building is applied to the database in real time.

The first column on the query form contains the query statement operators (**And, Or**). These operators are used to join the individual query statements. To see the **Structured Query Language (SQL)** query that you have built with the query tool, click the **View Text** button at the bottom of the screen. The **Clear All** button removes all selection criteria on the screen. Click the **Save** button on the **EMS Query Tool** to save a set of report criteria.

The **AND/OR** operators require some additional clarification. For example, if the user wants to include pavement sections constructed with asphalt and concrete then the correct operator is **OR**. The query will return any sections that fit either of the conditions. However, the **AND** operator only returns sections that fit all of the listed conditions. For example, selecting asphalt surfaces and branch use equal to parking lots with the **AND** operator returns only asphalt parking lots. Using **AND** with the first example will return nothing, since it is impossible for a section to be both asphalt and concrete surfaced.



Report Viewer - Summary and Detail Options

The PAVER analysis reports: **Condition Analysis Report**, and the **M&R Report** are presented in the **EMS Report Viewer**. The **EMS Report Viewer** is a tool that provides a framework for displaying multiple spreadsheet-like tables that contain report information. The spreadsheets in the **Report Viewer** can be associated with graphs that operate in conjunction with the spreadsheet tables. The **Report Viewer** organizes the presentation of report results in two basic views, the summary view and the detail view. The summary view includes high level views of summarized report data. The detail version of the report includes section by section details that are covered in the summary version of the reports. To switch from between the Summary and Detail views, click on the **Go to Detail/Summary** button.

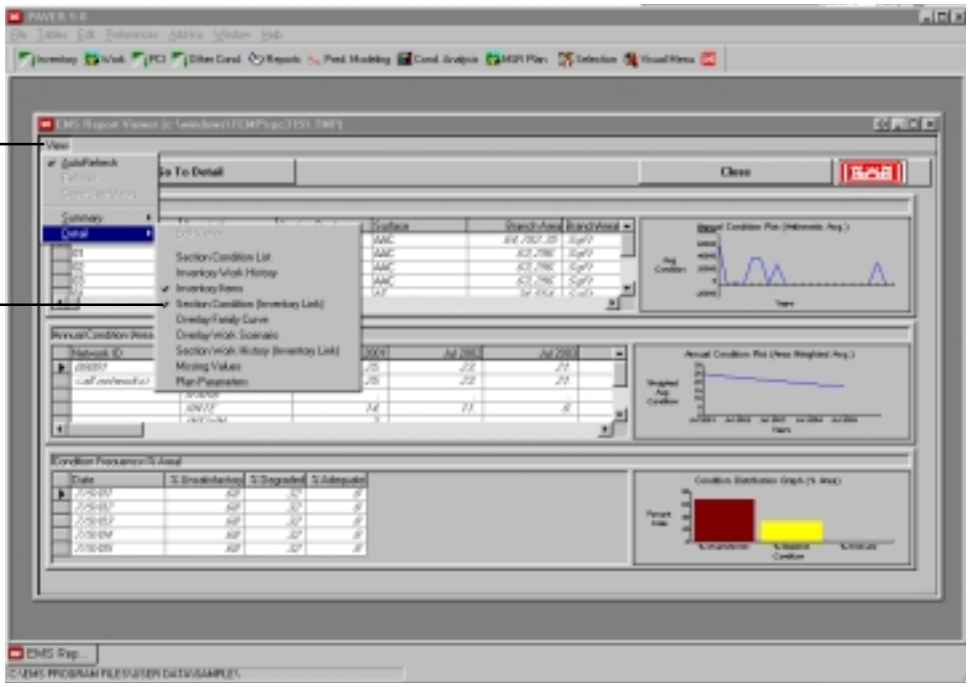
Note

When selecting and deselecting several different report views, **AutoRefresh** can be deselected so that PAVER won't redraw the graphs until the user re-selects the option.

View Menu - Display Specific Report Information

The **Report Viewer** includes a **View** option that is used to open and close the various spreadsheet views of the report data. You may use the **View** in the **Report Viewer** window to configure the report viewer so that it presents only the information you wish to view. The default presentation of the **Report Viewer** is the summary version. To turn off one of the summary tables (and its associated graph), select **View** from the **Report Viewer** window, **Summary** from the **View** sub-menu and then select the table which you want to turn off. Tables or graphs which are active in the current report view have a check mark to the left of the table or graph name.

Under the **Detail** sub-menu, **Plan Parameters** opens a table displaying the parameters that were used to configure the current report. This is convenient for checking the settings you requested when you ran the report without having to leave and rerun the report.



Note

Although the **View** button appears grey, it is always active.

Report Viewer Tables

The spreadsheet tables in the report viewer are standard PAVER tables and support the right button click on tables features. When an **EMS Report Viewer** report (I.E. **Condition Analysis** or **M&R Work Plan**) is displayed the tables are made active with a left click.

Spreadsheets in the **Report Viewer** can be associated with graphs. These graphs are implemented in two different ways. The first type associates a graph directly with a single row, the active or highlighted row, of the table. In this case, as the user changes the active row in the spreadsheet, the graph dynamically adjusts so that the graph reflects the active row in the spreadsheet.

The second type of graph association is as an overlay on an existing graph. For example, in the **Condition Analysis Report**, a table showing combined section condition history and projections is linked to a graph that plots the condition over time. This graph can further be overlaid with a plot of the family curve assigned to the section. As elsewhere in the program, graphs in the **Report Viewer** can be zoomed, printed or configured with the right button click on graphs feature.

Exiting the Report Viewer

When you have completed reviewing a **Report Viewer** report, close the report by closing the **Report Viewer** window. Click on the **Close** button in the top right corner of the **Report Viewer** window. Windows users may also use the mouse to select the close Window symbol (**X**) located in the upper right corner of the window.

After you close a report, you are prompted to save the report. If you choose to save the report, a file dialog box window is presented so that you can name the report to be saved. *Note: Each report type has its own unique file extension: Condition analysis reports are .rpc files and M&R Work Planning reports have .rpw extensions. These extensions should be maintained when you name a report file.*

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